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Exploring the Motivations and Cultural-Societal Influences Behind Dynamic Categorization of Word Meanings

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Abstract The dynamic categorization theory of word meaning is a novel trend of the development of categorization theory. Loss or weakening of the meaning, generalization or being empty, lexicalization or grammaticalization are all relevant to the dynamic nature of semantic categories. This paper explores the motivations behind the dynamic categorization of word meanings. We summarize objective motivations based on previous research and linguistic examples in Chinese and English, and investigate subjective motivations through empirical research involving questionnaires and Python visualization tools. Findings reveal that: (1) The dynamic nature of categorical attributes and the gradience of categories are the objective motivations of dynamic categorization of word meanings, while dynamic construal is the subjective motivation. (2) The variability of category members and the vagueness and openness of category boundaries enable diachronic evolution, and the gradience of category determines the gradual change of categories. (3) Dynamic construal in cognitive process allows for the instant construction of semantic categories.

Keywords: *Dynamic categorization, Category attributes, Dynamic construal, Motivations, Word meaning*

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1. Introduction

In cognitive semantics, the most fundamental and basic theory for the study of meaning is the theory of categorization. To address the shortcomings of Aristotle's classical category theory, various scholars have proposed corresponding theories. In the 1950s, Wittgenstein critiqued the classical category theory and introduced the concept of "family resemblance". In the 1970s, American psychologist Rosch (1978) revised it into the "prototype theory of categorization". Since then, Taylor (1989, p. 195), Croft and Cruse (2004, p. 92), and Liu (2006) have discussed "de-categorization" and proposed the dynamic nature of categorization. As research into dynamic categorization deepens, the dynamic categorization of word meaning provides fresh perspectives on the evolution and transformation

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of linguistic meanings. The process of meaning shifts, whether they involve loss, weakening, generalization, grammaticalization, or lexicalization, is intimately linked to the dynamic nature of semantic categories (Zeng, 2021). In recent years, scholars have increasingly focused on understanding the factors that drive these transformations, as they hold the key to unraveling the intricacies of language change (Basile, 2021; Sun, 2023; Wang & Pan, 2023).

In comparison, the scope of existing research on the dynamic categorization of word meanings remains to be expanded. Nowadays, most research about dynamic categorization focuses on practical applications, such as Li's (2023) study on narrative discourse from the perspective of dynamic categorization, and Wu and Zhan's (2022) research on the construction and change of the "you X mei X" pattern from the dynamic categorization perspective. There is still a lack of comprehensive research on the motivations behind the phenomenon of dynamic categorization of word meanings. The determination of a category's prototype is influenced by a variety of factors, including regional, temporal, cultural, and contextual differences (Wen, 2014). The dynamic development of categories is due to both intrinsic reasons within the categories themselves and extrinsic reasons related to language users (social and cultural backgrounds). The specific motivations for dynamic categorization are worthy of in-depth study from both subjective and objective perspectives.

Previous research by Zeng and Wen (2018) has laid the foundation for our understanding of dynamic categorization, proposing a framework that encompasses the gradual change within a category: the adjustment of family members within the category, the interaction/spanning between adjacent or similar categories, and the de-categorization, which refers to transferring beyond the same cluster model. These three types form a continuum of dynamic categorization, providing a robust tool for analyzing word meaning evolution. Building on this foundation, this paper delves into the subjective and objective motivations behind the dynamic categorization of word meanings by conducting three experiments. The study intends to identify the underlying forces that propel the historical and instantaneous evolution of word meanings, thereby contributing to a further comprehension of linguistic word meanings and gaining a holistic understanding of the dynamic categorization of word meanings, thereby enhancing our ability to predict and explain linguistic change. Therefore, this research is guided by the following research questions: (1) What are the objective and subjective motivations for dynamic categorization of word meanings? (2) How do these motivations influence the development of semantic categories? The significance of this endeavor lies in its potential to enrich our understanding of the intricate interplay between language, cognition, and society, as well as to inform linguistic theories and practices that acknowledge and account for the inherent dynamism of semantic categories.

2. Theoretical Framework

The theoretical framework of this study is based on the dynamic categorization theory of word meanings, which is the latest development in the theory of categorization. This theory is constructed and extended on the basis of non-categorization and prototype theories, providing a detailed understanding of how word meanings evolve and change over time and exploring the subjective and objective motivations behind the dynamic categorization of word meanings.

2.1. Dynamic Categorization Theory

In 1984, Hopper and Thompson first proposed that category attributes possess dynamism, using the concept of "Decategorization" to explicate the dynamic nature of categories. Subsequently, numerous scholars worldwide conducted extensive research on the dynamism of categories. Geeraerts (1997) underscores that the dynamic nature of "prototypes" reflects the dynamism of categories, suggesting that research on category dynamism should focus on changes in prototypes. Croft and Cruse (2004, p. 97) advocate a "dynamic cognitive word meanings" approach to understanding word meanings. Liu (2005) posits that "Decategorization" represents the most significant and intense manifestation of category's dynamic development, thus formalizing it into a grammatical theory. Liu (2009, p. 111) employs "grammaticalization" to elucidate the dynamic nature of categories, asserting that "grammaticalization can lead to the emergence of new grammatical category meanings". These studies underscore that the dynamism of semantic categories cannot be overlooked; loss or weakening of meanings, generalization or abstraction, lexicalization, or grammaticalization are fundamental

manifestations of the dynamism of semantic categories. Chen (2014, p. 17) argues that "many scholars have noted the dynamism of language categories, but few have explored it from empirical and systematic perspectives". Wen and Zeng (2018) provide the first descriptive definition of dynamic categorization of word meanings: dynamic categorization refers to the development of categories due to their inherent dynamic properties and people's dynamic cognition of meanings under the influence of mechanisms such as metaphor, metonymy, and emphasis. The processes of transformation, generalization, abstraction, lexicalization, and grammaticalization of word meaning are all manifestations of the dynamic nature of semantic categorization. These processes highlight how word meanings are not static but constantly evolving dynamic (Zeng, 2021). The dynamic categorization of word meaning generally undergoes the following process:

1) Conservative gradual changes within a Category: This type of change involves adjustments in the status of members within a category, resulting in a realignment of typicality and membership. For instance, secondary senses of words may expand or weaken, leading to shifts in the internal hierarchy of the category.
2) The interaction/spanning between the adjacent/similar semantic categories: This refers to the process of mutual expansion between adjacent or similar categories, allowing for the blurring of categorical boundaries and the emergence of hybrid meanings. This mechanism accounts for the interactive nature of meaning change, where meanings borrow from or contribute to neighboring categories.
3) The de-categorization: This refers to the transfer beyond the same cluster model. This represents a more radical form of change, where words may undergo complete re-categorization or de-categorization, moving beyond their original categorical framework. This type of change frequently involves significant shifts in the linguistic and conceptual representations of words.

With the development of this theory, the driving forces behind the phenomenon of dynamic categorization of word meanings have also attracted our attention. Based on Chinese and English corpora and empirical research, this article explores: (1) What are the objective and subjective motivations for the phenomenon of dynamic categorization of word meanings? (2) What are the subjective and objective motivations for the dynamic categorization of word meanings and their respective impacts on the development of semantic categories? By studying these two issues, we can understand the phenomenon of dynamic categorization of word meanings and its motivations so as to better explore the laws of word meaning evolution.

The dynamic category theory emphasizes dynamism, fluidity, and evolution of semantic categories. It believes that word meanings are not static entities but constantly changing due to the complicated interaction of objective and subjective factors. The objective motivations for the dynamic categorization of word meanings are primarily reflected in two aspects: firstly, the dynamic attribute is in the category itself, and secondly, the sloping nature of the word meaning is in the category itself. The dynamic recognition and understanding of word meanings in different contexts is the subjective motivation for the dynamic categorization of word meanings.

2.2. Category Attributes and Gradience

When exploring the objective motivations for the dynamic categorization of word meanings, we have to pay attention to the dynamic attributes of categories themselves, which is the core driving force for language evolution and word meaning development. The dynamism of categories is mainly reflected in two aspects: the variability of attributes of category members and the ambiguity and openness of category boundaries. The variability of category member attributes refers to the fact that the status of members within a category is not fixed. In the family similarity structure of categories, some members may be at the center as typical members, while others are distributed at the edges. This distribution makes the primary meaning of the category relatively stable, but the secondary meanings may expand or weaken in response to external factors such as geography and time, leading to a conservative gradient within the semantic categories. For example, with the changes in social culture, some originally peripheral meanings may gradually shift towards the center, or some central meanings may gradually be marginalized.

The ambiguity and openness of category boundaries are important features of the dynamic categorization of word meanings. The boundaries between categories are not always clear and distinct, but there exists a certain degree of ambiguity, which is called 'fuzziness'. This phenomenon is not a defect in the language system but a reflection of the inherent cognitive characteristics of human beings in language. Wittgenstein's theory of "family similarity" (1953) reveals the vague nature of semantic categories. He believes that category members are not closely connected by a set of sufficient and necessary conditions but are related to each other through a series of interwoven similarity features, which can be physical, functional, or psychological. This idea is echoed by Wu and Chen (1996), who asserted that category boundaries are "open and vague", allowing for word meaning evolution and the incorporation of new members without a radical overhaul of the word meaning structure. Therefore, the boundaries between category members are not insurmountable; rather transitional zones exist. For example, tomatoes and cucumbers can be considered both vegetables and fruits in the category of fruits and vegetables, and the uncertainty of this categorization reflects the ambiguity of the category boundaries. In addition, the openness of categories means that new members can be easily included in the category and become marginal members without the need for fundamental changes to the entire category structure. This openness allows for the emergence of new meanings and the expansion of old meanings, enabling language to flexibly adapt to social and cultural changes. For example, the category of "pets" traditionally mainly includes household ornamental animals such as cats and dogs. Nevertheless, with the advancement of technology and changes in lifestyle, electronic pets, and virtual pets are gradually accepted as new members of the "pet" category (Zeng, 2018). This process not only expands the boundaries of the "pet" category but also reflects how semantic categories sensitively capture and quickly respond to changes in human life.

The dynamic attributes of semantic categories not only enrich the connotation of language but also enhance the adaptability and expressiveness of language systems. It enables language to flexibly accept new members while allowing for overlapping and interweaving boundaries between category members, promoting the dynamic development of language. This dynamism and fuzziness are inherent properties of the language system, reflecting the flexibility and creativity of human cognition, and providing continuous motivation for the self-improvement and development of the language system. Therefore, the dynamic attributes of categories are important factors in the dynamic categorization process of word meanings.

One of the objective motivations for the dynamic categorization of word meanings is the gradience of categories, which means that the differences in the degree to which category members exhibit defining features are continuous rather than absolute. This concept was proposed by Ross (1972), emphasizing the differences between category members rather than category distinctions. In terms of linguistics, from word to grammar, the gradience consistently manifests itself (Lu, 2019; Torrens-Urrutia et al., 2023), and the pervasive characteristic is also within semantic categories. For example, "house" represents a noun more typically than "home". Denison (2001) pointed out that the word "fun" can be used as a noun or adjective in different contexts, demonstrating the flexible and sloping nature of its meaning. Sloping blurs the boundaries of word meanings, enhancing the adaptability and expressiveness of language. Although slope characteristics are widely accepted in theory, empirical research still needs to be strengthened. Future research can apply corpus, experimental linguistics, and other methods to explore in depth the expression of slope in different language cultures and its impact on the evolution of word meanings in order to comprehensively understand the dynamic categorization of word meanings and their roles.

2.3. Dynamic Construal in Cognition

In the three distinct classification models of construal proposed respectively by Langacker, Talmy, and Croft and Cruse, dynamism is recognized as an integral aspect of construal (Bien, 2021). Therefore, in addition to objective factors, dynamic categorization is also driven by subjective cognitive processes, especially dynamic construction. This refers to the way individuals perceive and interpret the language's meaning in a specific context. Factors such as the source meaning, contextual constraints, and individual cognitive biases shape the dynamic construction of word meanings. Source meaning is the original conceptual content associated with words, and it is the starting point for a dynamic understanding of

word meanings. In practical applications, the source meaning serves as the raw material for meaning generation and interacts with other factors in the context to form specific word meanings. The formation and development of source meaning are unconscious and closely related to individual experience; therefore, it has a high dependence on the context. The constraining factors include cognitive ability, authenticity, conventions, and context, which affect the comprehension of word meanings. Cognitive ability determines how individuals process and interpret information. Authenticity involves how individuals understand word meanings based on real-life experience, including social habits and language usage rules, while context includes the language environment, the material environment, the social environment, and background knowledge. They work together to ultimately understand word meanings.

In the process of dynamic construal, the attribute items of semantic categories may change, and the boundaries and levels of categories may also be adjusted according to the context. This process of understanding not only leads to the emergence of new meanings but may also cause dynamic changes in semantic relationships, such as the categorization of synonyms and antonyms. Overall, the subjective motivation for dynamic categorization of word meanings involves how individuals understand and use words in specific contexts through cognitive understanding. This process is dynamic, continuous, and influenced by multiple factors. In this paper, we will explore the subjective motivations behind the dynamic categorization of word meanings through empirical research.

3. Methodology

This study employs a mixed-methods research design, integrating both qualitative and quantitative methods, to thoroughly investigate the subjective motivations behind the dynamic categorization of word meanings from various perspectives.

3.1. Participants

The participants in this study consisted of 99 undergraduate students (50 females and 49 males) aged between 18 and 25 years old. The participants primarily majored in foreign languages and law, ensuring that they possessed the necessary background knowledge to comprehend and respond to the experimental tasks effectively. They were selected from three distinct regions: Chongqing (N=33), Tibet (N=33), and Russia (N=33). Chongqing represents a typical urban Chinese environment where people are primarily exposed to domesticated dogs. Tibet, with its high-altitude pastoral culture, features the Tibetan Mastiff as a culturally significant and prototypical dog, reflecting unique regional perceptions. Russia provides a non-Chinese context with a colder climate, where sled dogs play a central role in daily life and cultural identity. The inclusion of these three regions allows for a cross-cultural comparison of prototypical perceptions, highlighting how geographic and cultural factors influence the dynamic construal of semantic categories. This diversity ensures the robustness and generalizability of the findings.

Dogs were selected as the typical category in this study for several reasons. First, dogs play diverse roles across cultures (e.g., pets, working animals, and cultural symbols), making them ideal for exploring cross-cultural variations in prototype perception. Second, the word “dog” exhibits rich semantic diversity across contexts, allowing us to examine the dynamic construal and boundaries of semantic categories. Third, using a common and easily recognizable category like “dog” ensures experimental clarity and enables participants to respond effectively.

3.2. Instruments

All participants were asked to respond to the questionnaires. Relevant discourse examples were collected from the Beijing Language and Cultural University Corpus Center (BCC) and some books. The information on the three questionnaires and experiments is listed in the Appendix. The questionnaires were conducted online using the Questionnaire Star platform to ensure accessibility and ease of use.

3.2.1. Questionnaire for Experiment 1: The Influence of Geographic and Cultural Contexts on Prototypical Perception

The purpose was to examine how participants' geographic and cultural backgrounds influence their prototypical of the category "dog". It included a single open-ended question: "In the environment where you grew up, which type of dog best represents the typical image of a 'dog'?"

3.2.2. Questionnaire for Experiment 2: The Effect of Dynamic Construal in Cognition on Categorical Attributes of Word Meaning

The purpose was to investigate whether dynamic construal in cognition changes the categorical attributes of the word "dog" across different contexts. It included three situational sentences with multiple-choice answers:

Sentence 1: "I have a pet dog".
Sentence 2: "You dirty dog!"
Sentence 3: "Her last movie was an absolute dog".

Choose the best answer to represent the "dog": A. a bad work. B. an immoral person. C. a pet animal.

3.2.3. Questionnaire for Experiment 3: The Effect of Dynamic Construal in Cognition on the Boundaries of Semantic Categories

The purpose was to examine how participants perceive the boundaries of the category "dog" in specific contexts. It included three questions requiring "Yes," "No," or "Not Sure" responses:

Q1: "A dog has four legs. Do you think a dog that has lost a leg still belongs to the category of 'dog'?"
Q2: "Dogs are mammals. From a biological perspective, do you think a three-legged dog and a stray dog still belong to the category of 'dog'?"
Q3: "A dog makes an excellent companion for an old person. Do you think stray dogs can be considered members of the 'dog' category, especially when they are unable to be excellent companions for elderly people?"

3.3. Procedure

3.3.1. Data Collection

In Experiment 1, participants were divided into three regional groups based on their geographic backgrounds: Chongqing, Tibet, and Russia. Each of them was asked to respond to a single open-ended question. In Experiment 2, all 99 participants read three situational sentences and selected the best option to represent the meaning of "dog" in each context. In Experiment 3, all 99 participants responded to three context-based questions designed to test their perceptions of category boundaries. In these three experiments, the participants were instructed to complete corresponding questionnaires within one week, with each questionnaire taking approximately 20 minutes to complete.

3.3.2. Data Analysis

After categorizing the collected data and organizing it into tables, we utilized two widely adopted Python visualization tools, Matplotlib and Seaborn, to create a heatmap and bar charts. In the first experiment, we visualized the data using a heat map with Python. Descriptive statistics were employed to characterize the distribution of responses to the prototype of the "dogs" category, including both the number of responses and their respective percentages. In the second and third experiments, Python was used to analyze the data using bar charts, with descriptive statistics providing insights into the distribution of participant responses to three specific questions in each experiment. Following this, based on the experimental findings, we analyzed the subjective motivations behind the dynamic categorization of discourse examples collected.

4. Results

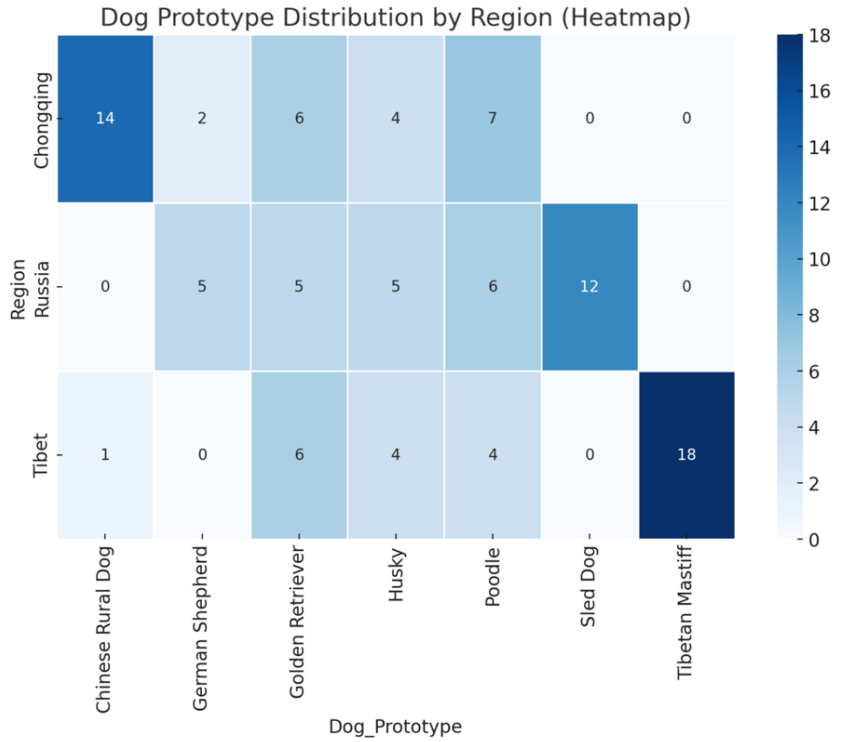
4.1. Experiment 1: The Influence of Geographic and Cultural Contexts on the Prototypical Perception

Figure 1 presents a heatmap illustrating the distribution of dog prototypes as perceived by participants across three regions: Chongqing, Tibet, and Russia. The dog prototypes include the Chinese Rural Dog, German Shepherd, Golden Retriever, Siberian Husky, Poodle, Sled Dog, and Tibetan Mastiff.

The heatmap visualizes the frequency with which each dog prototype was chosen, with color intensities corresponding to the number of participants selecting each prototype. Distinct patterns emerge across regions, reflecting unique geographic, cultural, and environmental influences on the prototypical perception of dogs. For instance, the Chinese Rural Dog dominates in Chongqing, the Tibetan Mastiff is strongly associated with Tibet, and sled dogs are most commonly identified in Russia.

Figure 1

Dog Prototype Distribution by Region



According to Figure 1, the results are as follows:

Chongqing: 14 participants (42.42%) choose Chinese Rural Dogs, 2 participants (6.06%) choose German Shepherds, 6 participants (18.18%) choose Golden Retrievers, 4 participants (12.12%) choose Siberian Huskies, 7 participants 21.21 (%) choose Poodles, and no one chooses sled dogs and Tibetan Mastiffs.

Tibet: 18 participants (54.55%) choose Tibetan Mastiffs, 1 (3.03%) participant choose Chinese Rural Dogs, 6 (18.18%) participants choose Golden Retrievers, 4 (12.12%) participants choose Siberian Huskies, 4 (12.12%) participants choose Poodles, and no one chooses German Shepherds and sled dogs.

Russia: 12 participants (36.36%) choose sled dogs, 5 (15.15%) participants choose German Shepherds, 5 (15.15%) participants choose Golden Retrievers, 5 (15.15%) participants choose Siberian Huskies, 6 (18.18%) participants choose Poodles, and no one chooses Tibetan Mastiffs and Chinese Rural Dogs.

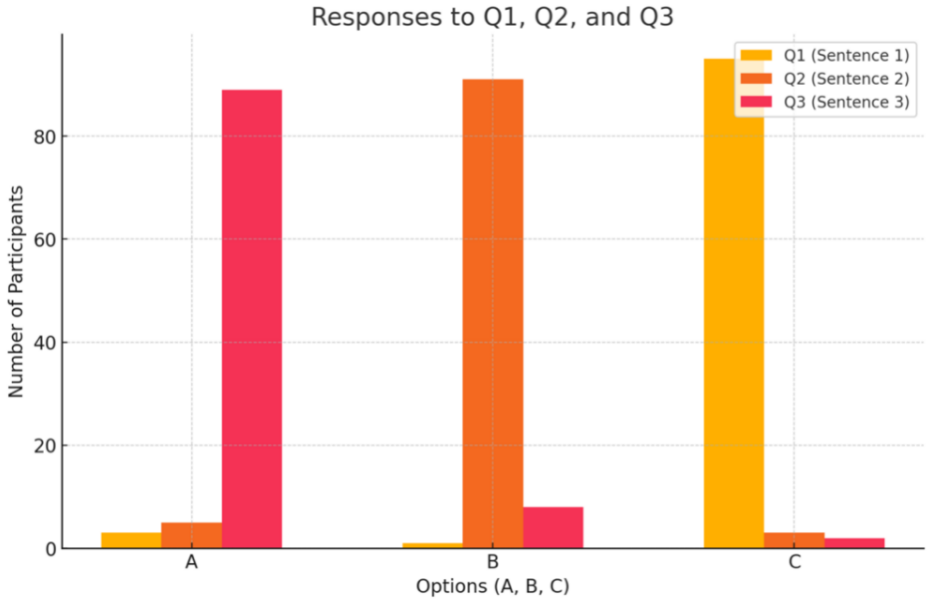
4.2. Experiment 2: The Effect of Dynamic Construal in Cognition on Categorical Attributes of Word Meaning

Figure 2 shows the distribution of participants' responses to three different questions (Q1, Q2, Q3). Each question provides three options (A, B, C) representing the different meanings of "dog" in the sentence. The chart visually displays the number of people choosing each option in the form of a bar chart.

From the chart, it can be seen that when "dog" is used to describe a pet (Q1), the vast majority of participants correctly chose option C. However, when "dog" was used in a derogatory or metaphorical sense (Q2 and Q3), participants' interpretations underwent significant changes. In Q2, most participants understood "dog" as referring to an immoral person, while in Q3, the vast majority of participants understood "dog" as describing a bad work. This indicates that context is crucial for understanding the polysemy of vocabulary and also reflects the sensitivity and comprehension ability of participants towards the meaning of the word "dog" in different contexts.

Figure 2

Responses to Q1, Q2 and Q3, Option A： A Bad Work; Option B: An Immoral Person; Option C: A Pet Animal



According to Figure 2, the results are as follows:

Q1: I have a pet dog. Which of the following options best represents the "dog" in the sentence? A. a bad work; B. an immoral person; C. a pet animal.

The distribution of participants' options is as follows: 3 (3%) participants chose A, 1(1%) chose B, and 95 (96%) chose C.

Q2: You dirty dog! Which of the following options best represents the "dog" in the sentence? A. a bad work; B. an immoral person; C. a pet animal.

The distribution of participants' options is as follows: 5 (5%) participants chose A, 91 (92%) chose B, and 3 (3%) chose C.

Q3: Her last movie was an absolute dog. Which of the following options best represents the "dog" in the sentence? A. a bad work; B. an immoral person; C. a pet animal.

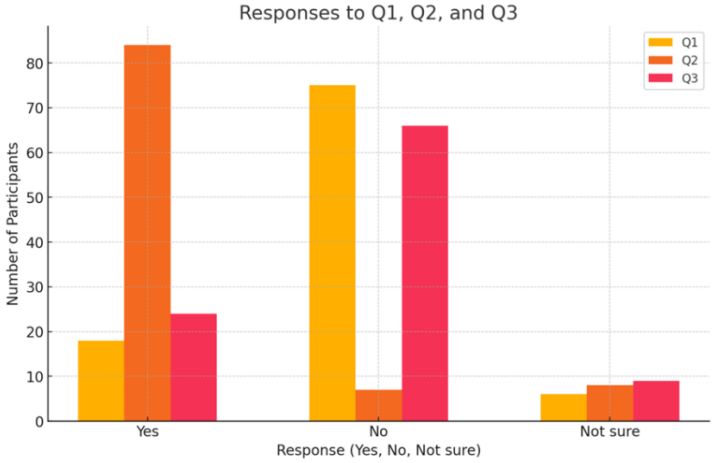
The distribution of participants' options is as follows: 89 (90%) participants chose A, 8 (8%) chose B, and 2 (2%) chose C.

4.3. Experiment 3: The Effect of Dynamic Construal in Cognition on the Boundaries of Semantic Categories

Figure 3 shows the distribution of participants' responses to three different questions (Q1, Q2, Q3) and each question provides three options (yes, no, not sure). The chart visually displays the number of people choosing each option in the form of a bar chart.

From the chart, it can be seen that for Q1, most participants believe that dogs who have lost one leg no longer belong to the category of "dog", which may reflect a fixed view of the physical characteristics of "dogs". For Q2, the vast majority of participants agree that three legged dogs and stray dogs still belong to the category of "dogs", indicating a high degree of recognition of biological classification in the minds of participants. For Q3, most participants believe that stray dogs should not be considered as members of the "dog" category, which may be related to the social functioning and expectations of dogs. These results reveal the diversity of participants' understanding and classification of the concept of "dog" in different contexts.

Figure 3
Responses to Q1, Q2 and Q3



According to Figure 3, the results are as follows:

Q1: A dog has four legs. Do you think a dog that has lost a leg still belongs to the category of "dog"?

The distribution of participants' options is as follows: 18 (18.18%) participants chose yes, 75 (75.76%) chose no, and 6 (6.06%) chose not sure.

Q2: Dogs are mammals. From a biological perspective, do you think a three-legged dog and a stray dog still belong to the category of "dog"?

The distribution of participants' options is as follows: 84 (84.85%) participants chose yes, 7 (7.07%) chose no, and 8 (8.08%) chose not sure.

Q3: A dog makes an excellent companion for an old person. Do you think stray dogs can be considered members of the "dog" category, especially when they are unable to be excellent companions for elderly people?

The distribution of participants' options is as follows: 24 (24.24%) participants chose yes, 66 (66.67%) chose no, and 9 (9.09%) chose not sure.

5. Discussion

This study investigates the subjective motivations underlying the dynamism of semantic categories through a series of three experiments, revealing how cognitive differences stemming from geographical

and cultural backgrounds influence the construction of prototypes and boundaries within semantic categories. Language is dynamic. Words may mean today something quite different than in some earlier period (Jean, 2013). The findings indicate that semantic categories are not static; rather, they are subject to immediate adjustment based on shifts in subjective cognition. These results provide robust empirical support for the theory of dynamic categorization and extend its application to some extent.

First, the construction of category prototypes or members is shaped by cognitive differences that arise from distinct geographical and cultural contexts. It should be noted that the issues in categorization with which we are primarily concerned have to do with explaining the categories found in a culture and coded by the language of that culture at a particular point in time. When we speak of the formation of categories, we mean their formation in the culture (Eleanor & Barbara, 2024). In addition, as Montello (2005) noted, research in cognition is relevant to many issues involving geographic information. Consumers of geographic information are not all the same. Some of these variations among individuals include differences in perceptual and cognitive styles, abilities, and preferences. Cognitive differences have an impact on the understanding of geographic information. In return, geographic information causes different cognition. In the first experiment, participants from different regions exhibited varied perceptions of the prototype for the category "dog". For example, participants from Chongqing, Tibet, and Russia primarily identified the Chinese rural dog (中华田园犬), Tibetan Mastiff (藏獒), and Siberian Husky (雪橇犬) as typical exemplars of the category "dog" respectively. This variation can be attributed to the prominence of these dog breeds in their respective regions. In most parts of China, including Chongqing, the Chinese rural dog is commonly regarded as the prototype, often referred to as "土狗" (native dog). In Tibet, the Tibetan Mastiff is considered the prototypical dog due to its prevalence, while in cold Siberian regions of Russia, Siberian Huskies are seen as the prototype because of their vital role in transportation and hunting. Psychologists and anthropologists are now asking similar questions, and they share the common goal of understanding how human minds deal with the human environment (Malt, 1995). This regional variation demonstrates that both culture and geographical environment profoundly influence individual cognition regarding category prototypes, confirming the cultural dependency on category prototypes and highlighting the importance of cultural factors in the construction of linguistic categories.

Second, dynamic cognition and construal also affect the construction of semantic category boundaries. Results from experiments two and three show that participants readjusted the boundaries of the category "dog" based on different contexts, reflecting the dynamic process of word meaning construction. In experiment two, participants dynamically adjusted the boundaries of the category on three levels: physical characteristics, biological traits, and social functions. This suggests that dynamic construal not only impacts category boundaries but also facilitates the immediate restructuring of category hierarchies. In the first question (Q1), participants tended to define "dog" based on physical characteristics, limiting the category to dogs with all limbs intact. In the second question (Q2), they shifted focus to biological commonalities, acknowledging that dogs with physical disabilities or stray dogs still belong to the "dog" category. In the third question (Q3), participants approached the category from a social function perspective, restricting the category to pet dogs while excluding stray dogs from the "dog" category on the grounds that they do not serve as companions for the elderly. Experiment three further corroborated these findings, demonstrating that participants' interpretations of "dog" shifted significantly in different contexts. For example, in Q1, participants predominantly interpreted "dog" as a pet, while in Q2, many interpreted "dog" metaphorically as an immoral person. In Q3, "dog" was often understood as a poor-quality product, reflecting the immediate contextual construction of category attributes. These results suggest that the construction of word meaning is contingent not only on linguistic properties but also on immediate context and cognitive needs.

Through the study of linguistic examples from corpora, we observe that the immediate adjustment of category hierarchies and dynamic categorization of word meanings are also central to the dynamic nature of categorization. On the one hand, the construction of category hierarchies in different cognitive contexts is highly individualized and influenced by communicative needs (Rosch & Lloyd, 1978). For example, breeders with specialized knowledge may categorize specific dog breeds such as "Labrador", "Poodle", and "Golden Retriever" as basic-level categories, with "dog" serving as the superordinate category. This upward shift in category hierarchy allows for more precise communication in

professional contexts. However, when professionals communicate with non-experts, they may adjust their category hierarchies to align with the recipient's understanding. For instance, a breeder might use "dog" as the basic-level category and reserve specific breed names for subordinate levels to facilitate effective communication. On the other hand, the dynamic categorization of word meanings reveals that synonym and antonym relationships are not fixed; they adjust dynamically based on context (Zeng, 2020). In different contexts, the image schemas and word meaning attributes expressed by words can be interpreted and constructed in real-time, resulting in the relationships between words being in a state of dynamic development. Words that are originally unrelated can enter the category of synonymy, while under the influence of context, two words that originally had an antonymous relationship may leave the category of antonymy and enter synonymy. Furthermore, the three subcategories of antonymy—complementary antonyms, gradable antonyms, and directional antonyms—can also have their boundaries blurred or even transform into one another based on dynamic interpretation within context.

As Malt (1995) stresses, cognitive psychologists have also been concerned with understanding human categorization. The world is filled with an incredible number and diversity of objects. The ability to group objects into categories provides efficiency in communication and memory, so it is among the most fundamental of cognitive processes. Therefore, the categorization of synonymy is intrinsically linked to human cognition, with the prototype of this category being typical synonymous pairs yet with open and vague boundaries. Membership within a synonym category is not fixed. Prototypical synonyms are relatively stable members of their categories, generally unaffected by context, differing only in terms of stylistic or emotional connotations. However, another subset of words, referred to as "dynamic synonyms", exists, which are not stable members of the synonym category. Their semantic relationships evolve dynamically with the context, allowing them to become synonyms in some contexts while being entirely unrelated in others. This dynamic presence keeps the boundaries of synonym categories open and unstable. Additionally, as context evolves, metaphor, metonymy, and euphemism can cause originally unrelated words to become synonyms, thus expanding the boundaries of synonym categories. These temporary synonyms, upon repeated usage, may solidify and become stable members of the synonym category, which we term "solidified synonyms".

Firstly, let's discuss prototypical synonyms. According to traditional semantics, it is challenging to find words that can be completely interchangeable without any difference in meaning. Nevertheless, we recognize the existence of prototypical synonyms. Prototypical synonyms refer to words whose meanings and usages are highly similar, typically interchangeable, but with varying degrees of meaning, emotional connotations, or stylistic differences. For instance, 女儿 (Nv er: daughter), 闺女 (Gui nv: daughter), 千金 (Qian jin: daughter), and 令嫒 (Ling ai: daughter) all mean "female child" in English but carry different connotations and usages: "Qian jin" and "Ling ai" are more formal, while "Gui nv" is colloquial. Another example is 谋取 (Mou qu: seek) and 牟取 (Mou qu: obtain), where "seek" is neutral, while "obtain" implies a negative connotation. Similarly, 苗条 (Miao tiao: slender) and 修长 (Xiu chang: willowy) both mean "not fat and attractive" and carry positive connotations with a similar stylistic tone. However, their collocational preferences differ slightly. For example, one can say "slender fingers" but not "willowy fingers". Prototypical synonyms maintain their synonymy regardless of context. Only in contexts involving specific emotional nuances, stylistic tones, or particular collocations does one member of the synonym pair become preferable.

Secondly, let's explore dynamic synonyms. Croft and Cruse (2004) argue that word meanings are inherently vague and dynamically constructed, constantly adjusting to the context. Therefore, synonymy is not fixed, and membership within a synonym category can be dynamically constructed or dissolved depending on the context. Zhao (2005) posits that word meanings are fluid, making the existence of true synonyms impossible. The synonymy category is built upon context-driven pragmatic inference, leading to the dynamic construction of meaning relationships.

For example, consider the English words "have" and "eat". When the object following these verbs is food-related, "have" and "eat" are synonymous, both meaning "to consume", as in:

(1) a. Come and have noodles with us tonight.
(1) b. Come and eat noodles with us tonight.

In these sentences, “have” and “eat” can be interchanged when the object is “noodles”, evoking a similar eating schema. However, in the following examples:

(2) a. I have a new car.
(2) b. I am eating an apple now.

In sentence (2a), “have” means “to possess,” while in (2b), “eat” means “to consume”. Here, “have” and “eat” do not share conceptual similarities and thus do not belong to the synonymy category. Their synonymy is contextually dynamic, altering with the semantic environment. The world is composed of things and actions, where actions embody the relationships between things. When people perceive the world, they categorize things, and naturally, they also categorize actions in the same way. The result of categorizing actions is verbs (Wu & Xiao, 2016).

Similarly, “heavy” and “sad” seem unrelated but can be dynamically constructed as synonyms through context, as in:

(3) a. heavy news
(3) b. sad news

These terms become synonymous because when people experience sadness, they often feel a sense of heaviness and a sinking sensation in their hearts. Metaphor is the primary cognitive technique employed for storing and categorizing knowledge about the surrounding world (Alzhanova et al., 2024). Through metaphorical mapping, “heavy” can be transferred from the physical domain to the psychological domain, signifying a similar feeling of sorrow as “sad”. Differing contexts dynamically construct the image schemas and semantic attributes these words convey. Thus, the relationship between words evolves, transforming them from unrelated words into synonyms. This highlights why absolute synonyms are nearly non-existent; synonymy is dynamic rather than fixed and stable. Words with synonymous relationships in one context may trigger similar image schemas or semantic features, making them synonyms, but this relationship can dissolve with a change in context.

Such word-meaning relationships are classified under the synonymy category because they evoke similar image schemas or semantic features in specific contexts, a common phenomenon in synonymy categories. Consistency in image schemas or semantic features is a crucial criterion for determining whether two words belong to the synonymy category. These two levels are relatively independent. Some words share only the same image schema or semantic features, yet they can still be considered members of the synonymy category. For instance, the Chinese terms 好寒 (Hao han: cold) and 好汉 (Hao han: hero) evoke entirely different image schemas but express similar semantic features, thus maintaining their membership within the synonymy category.

Lastly, we address solidified synonyms. Apart from contextual factors, synonymy can also arise through metonymy, metaphor, and euphemism. Some instant synonyms are highly context-dependent and cease to exist outside that context. However, some contextually derived synonyms are not only novel but also align with cultural norms, eventually solidifying through repeated use to become stable members of the synonym category. For example:

(4) The compass turned angrily and muttered as they walked away, slipping my mother’s pair of gloves into their waistbands.

In this example from “Hometown” by Lu Xun, “compass” metaphorically refers to a thin person, creating a temporary synonymy with 杨二嫂 (Yang er sao: the thin Mrs. Yang). However, most synonyms generated through metonymy have high contextual requirements and usually only temporarily enter the synonymy category, making it difficult for them to become permanent members. As context changes, these synonymic relationships often dissipate. Only a small subset of metonymically derived synonyms becomes fixed category members over time, such as “blue-collar” for “workers” and “white-collar” for employees.

Metaphor also generates synonyms. Focusing on different frame components within the same frame will lead to adopting corresponding perspectives to observe the entire frame. When a particular frame

component has not yet been lexicalized or lacks corresponding linguistic representation, people adopt metaphorical or metonymic construals to lexicalize that frame component in order to follow the principle of linguistic economy (Wu & Xiao, 2016). Metaphor is not just a rhetorical device but a fundamental cognitive process. Metaphors can be root metaphors (dead metaphors) or novel metaphors. Root metaphors are deeply ingrained in cognition, becoming fixed meanings over time, such as "mountaintop, mountain foot, and wave". Novel metaphors refer to those with particularly unique meanings, requiring a high degree of contextual specificity for their creation. The source domain of novel metaphors projects onto the target domain in a temporary and vague manner. As Ge (2001) points out, the proliferation of novel metaphors adds a batch of synonymous expressions to the language system. For example:

(5) It's time to unload the burden from your heart and move forward lightly.
(6) He already knows the crux of the national predicament.

In these sentences, 包袱 (Bao fu: burden) is synonymous with "burden," and 症结 (Zheng jie: crux) with "key". Through these novel metaphors, previously unrelated words form temporary synonymy. In the "8000 Synonym Dictionary," numerous synonyms are generated through metaphorical mechanisms, such as 鹰犬 (Ying quan: hounds) —帮凶 (Bang xiong: accomplices), 桎梏 (Zhi gu: fetters) —枷锁 (Jia suo: shackles), 心腹 (Xin fu: confidant) —亲信 (Qin xin: trusted aide), and 推敲 (Tui qiao: deliberate) —斟酌 (Zhen zhuo: ponder). These initially temporary synonyms gradually solidify through usage, becoming stable members of the synonym lexicon. The strong generative capacity of metaphors significantly contributes to this process, structuring our thoughts and language. This robust word-creation ability continually expands the category of synonyms.

The family members within antonymy categories are not fixed. Words may instantaneously construct antonymy through context, becoming members of the antonymy category, or lose antonymy due to context, possibly becoming synonyms. For instance, at a parent-teacher meeting, a mother inquires about her child's performance:

(7) Parent: Teacher, how is my son Liu Xing performing?

Teacher: Liu Xing is very well-behaved! There's hardly a day he doesn't fight with his classmates.

乖 (Guai: well-behaved) typically means "obedient" or "diligent", but here, due to irony, it implies the opposite, violating the politeness principle of the Cooperation Principle to convey criticism. Thus, "well-behaved" exits the synonymy category and enters the antonymy category. Another example:

(8) I lost my mother at three; he is both my father and my mother. (*Ordinary World*)

In the domain of "family", 父亲 (father) and 母亲 (mother) are complementary antonyms—one is not a father if one is a mother. However, in this context, 父亲 (father) and 母亲 (mother) become near-synonyms, meaning "the person who raised me". Through contextual influence, these originally antonymous terms leave the antonym category and enter the synonym category.

In conclusion, the dynamic categorization of word meanings is a complex and evolving process influenced by both the objective properties of language and the subjective cognitive processes of language users. The dynamic and gradient nature of categories provides a stable diachronic potential for word meaning evolution, while cognitive construal and immediate adjustments propel the real-time construction and evolution of semantic categories. In this process, word meanings are not merely static descriptions; they continuously develop and change through interaction with and adaptation to context.

The findings of this study are consistent with existing categorization theory, such as the experimental work of Barsalou (1983) and the research of Geeraerts and Cuyckens (2010), both of which demonstrate that word meanings adjust with cognitive and contextual changes. Our findings not only validate these theories but also emphasize the dynamism of semantic categories, particularly in complex contexts where culture, geography, and cognition intersect. The practical implications of this study are also significant, offering educators a theoretical foundation for adjusting teaching strategies based on students' cultural backgrounds, thereby enhancing the effectiveness of cross-cultural education.

Furthermore, these insights are relevant to psychology and cognitive science, contributing to a deeper understanding of the role of human cognition in language categorization.

While this study provides valuable insights into the dynamic categorization of word meanings, it has several limitations. The observations were based on our analysis of examples from corpora or literary works, but future empirical research could further substantiate these findings. The research samples were largely concentrated within specific geographical and cultural contexts, which may limit the generalizability of the findings. Additionally, the study focused primarily on the semantic category of "dog", with an insufficient exploration of other words and semantic categories. The sample was predominantly composed of college students, which may further restrict the broader applicability of the findings. Finally, since the study addressed the immediate adjustment of category hierarchies and the dynamic categorization of word meanings, further research is needed to deepen understanding in these areas.

To address these limitations, future research should adopt several measures to broaden the scope and depth of investigation. First, expanding the sample to cover a wider range of cultural and geographical contexts would help examine the global universality and variation of dynamic categorization. Second, extending the study to encompass more words and semantic categories would enhance the validation of dynamic categorization theory. Additionally, involving a more diverse participant base would increase the external validity and generalizability of the findings. Lastly, further empirical research is needed to deepen the understanding of the immediate adjustment of category hierarchies and the dynamic categorization of word meanings. By adopting these approaches, future research can provide richer and more comprehensive insights, thereby advancing the fields of linguistics and related disciplines.

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References

Alzhanova, A., Balmagambetova, Z., Zeinulina, A., Aratayeva, A., & Issabayeva, N. (2024). Cultural encounters in translation: Analyzing representation issues of a cognitive metaphor case in literature. *International Journal of Society, Culture & Language*, *12*(3), 32-45. https://doi.org/10.22034/ijscl.2024.2029453.3521

Barsalou, L. W. (1983). Ad hoc categories. *Memory & Cognition, 11*(3), 211–227. https://doi.org/10.3758/BF03196968

Basile, G. (2021). Categorization, memory and linguistic uses: What happens in the case of polysemy. In F. Macagno & A. Capone (Eds.), *Inquiries in philosophical pragmatics* (pp. 95-108). Springer.

Bien, D. H. (2021). Construal and its representative forms in cognitive linguistics. *Dalat University Journal of Science, 11*(3), 3-27. https://doi.org/10.37569/DalatUniversity.11.3.697(2021)

Chen, Y. (2014). Shilun yuyan fanchouxia "yuyi" de dongtai bianhua-yi hanying shuliang fanchou wei li [On the dynamic changes of "semantics" in language categories: Taking the quantitative categories of Chinese and English as examples]. *Journal of North China Electric Power University (Social Sciences), 3*, 111-117.

Croft, W., & Cruse, D. A. (2004). *Cognitive linguistics.* Cambridge University Press.

Denison, D. (2001). Gradience and linguistic change. *Amsterdam Studies in the Theory and History of Linguistic Science Series 4, 13*, 119-144.

Fang, Z. C. (2022). Jiyu yuliaoku de tongyici shiyong tezheng yanjiu-jian lun duiying fenxi fangfa. [Research on the characteristics of synonym usage based on corpus data — concurrent discussion on corresponding analytical methods]. *Foreign Languages Research, 39*(5), 45-51.

Ge, B. Y. (2001). *Xiandai hanyu cihui xue* [Modern Chinese lexicology]. Shandong People's Publishing House.

Geeraerts, D. (1997). *Diachronic prototype semantics: A contribution to historical lexicology.* Clarendon Press.

Geeraerts, D., & Cuyckens, H. (Eds.). (2010). *The Oxford handbook of cognitive linguistics.* Oxford University Press.

Hopper, P. J., & Thompson, S. A. (1984). The discourse basis for lexical categories in universal grammar. *Language, 60*(4), 703-752.

Li, X. Q. (2023). Research on narrative discourse from the perspective of dynamic categorization. In (Eds.), *Innovation in foreign language education and translation development* (Vol. 14, pp. 91-94). Chongqing University of Foreign Trade and Economics.

Liu, Z. G. (2005). Yuyan fei fanchouhua de gongzuo jizhi [The working mechanism of language non-categorization]. *Foreign Languages Research, 1*, 9-15.

Liu, Z. G. (2006). *Language decategorization: An integral part of linguistic categorization.* Shanghai Foreign Language Education Press.

Liu, D. Q. (2009). A re-analysis of non-standardized explanations. *World Chinese Language Teaching, 1*, 5-18.

Lu, Z. (2019). *Identifying word categories in Mandarin Chinese with a constructional approach.* Variação e Mudança em Gramática de Construções.

Montello, D. R. (2005). Cognition of geographic information. In R. B. McMaster & E. L. Usery (Eds.), *A research agenda for geographic information science* (pp. 61-91). CRC Press.

Malt, B. C. (1995). Category coherence in cross-cultural perspective. *Cognitive Psychology, 29*(2), 85-148.

Rosch, E., & Loyd, B. B. (Eds.). (2024). *Cognition and categorization.* Taylor & Francis.

Ross, J. R. (1972). The category squish: Endstation hauptwort. In P. Peranteau, N. Judith, N. Levi, & G. C. Phares (Eds.), *Papers from the Eighth Regional Meeting* (Vol. 8, pp. 316-328). Chicago Linguistic Society.

Rosch, E., & Lloyd, B. B. (Eds.). (1978). *Cognition and categorization* (1st ed.). Routledge. https://doi.org/10.4324/9781032633275

Rosch, E. (1978). Principles of categorization. In E. Rosch & B. B. Lloyd (Eds.), *Cognition and categorization* (pp. 27-48). Erlbaum.

Sun, Y. (2023). *Cognitive study on the semantic categorization of Chinese body words.* Science Press.

Taylor, J. R. (1989). *Linguistic categorization: Prototypes in linguistic theory.* Oxford University Press.

Torrens-Urrutia, A., Novák, V., & Jiménez-López, M. (2023). Fuzzy property grammars for gradience in natural language. *Mathematics, 1*(1), 1-15.

Wang, C. J., & Pan, W. (2023). On the cognitive experience replication pattern in the generation process of Chinese polysemous words: Taking the word "men" as an example. *Journal of Southeast University (Philosophy and Social Science Edition), 25*(4), 125-132.

Wen, X. (2014). *Yuyan de renzhi jichu* [Cognitive basis of language]. Science Press.

Wen, X., & Zeng, R. (2018). Cong fanchou dongtaihua jiaodu kan cihuihua yu yufahuan de guanxi-yi hanyun "danshi" weili [The relationship between lexicalization and grammaticalization from the perspective of categorization dynamics: Taking Chinese "but" as an example]. *Foreign Language Education, 2*, 7-13.

Wittgenstein, L. (1953). *Philosophical investigations.* Basil Blackwell.

Wu, S. X., & Chen, W. Z. (1996). Lun yuyi fanchou de jiazu xiangsixing [On family similarity in word meaning category]. *Foreign Language Teaching and Research, 4*, 14-19.

Wu, S. Q., & Zhan, Y. R. (2022). Dynamic categorization of "having X and not having X": Construction and constructional change. *Foreign Language Research, 4*, 29-33. https://doi.org/10.13978/j.cnki.wyyj.2022.04.011

Wu, X. F., & Xiao, K. (2016). Jiyu yuliaoku de yingyu dongci jinyici bianxi de renzhi yuyanxue yanjiu. [A cognitive linguistics study on the discrimination of English verb synonyms based on corpus data]. *Foreign Languages Research, 33*(5), 46-51.

Zeng, R. (2018). *Research on the dynamic categorization of word meaning* [Doctoral dissertation, Southwest University]. Southwest University.

Zeng, R. (2020). Ciyi de dongtai fanchouhua zai yuyan butong weidu shang de shixian [The realization of dynamic semantic categorization across different dimensions of language]. *Foreign Language Teaching and Research, 52*(1), 53–63, 158.

Zeng, R. (2021). Jiti/ cexian jizhi xia de ciyi dongtai fanchouhua yanjiu [The base/profile approach to dynamic semantic categorization: Taking the verb "do" as an example]. *Foreign Languages in China, 3*, 40-48.

Zhang, C. Y., & Ran, Y. P. (2024). Jiyu yuliaoku de and xiaoju fuheti de luoji yuyi dongtaixing yanjiu. [A corpus-based analysis of the dynamic logico-semantic relations of and-clause complexes]. *Technology Enhanced Foreign Language Education, 1*, 85-92.

Zeng, R., & Wen, X. (2018). Dynamic categorization of semantics of fashion language: A memetic approach. *International Journal of Society, Culture & Language, 6*(1), 101-114.

Zhao, Y. C. (2005). *Renzhi cidian xue tansuo* [Exploration of cognitive lexicography]. Shanghai Foreign Language Education Press.

Appendix

Experiment Questions

Experiment 1: The Influence of Geographic and Cultural Contexts on the Prototypical Perception
Question: In the environment where you grew up, which type of dog best represents the typical image of a "dog"?

Experiment 2: The Effect of Dynamic Construal in Cognition on Categorical Attributes of Word Meaning
Sentence 1: A dog has four legs.
Sentence 2: Dogs are mammals.
Sentence 3: A dog makes an excellent companion for an old person.
Each question's options are as follows:
A. a bad work
B. an immoral person
C. a pet animal
Please read these sentences and choose the best answer that can correctly represent the "dog" in each sentence.

Experiment 3: The Effect of Dynamic Construal in Cognition on the Boundaries of Semantic Categories
Q1: A dog has four legs. Do you think a dog that has lost a leg still belongs to the category of "dog"?
Q2: Dogs are mammals. From a biological perspective, do you think a three-legged dog and a stray dog still belong to the category of "dog"?
Q3: A dog makes an excellent companion for an old person. Do you think stray dogs can be considered members of the "dog" category, especially when they are unable to be excellent companions for elderly people?
Please read these sentences and questions, then choose the best answer (Yes, no, or not sure) that can truly represent your thinking.

Discourse examples
(1) a. Come and have noodles with us tonight. (*Cognitive Linguistics* by Croft, W., & Cruse, D. A)
b. Come and eat noodles with us tonight. (*Cognitive Linguistics* by Croft, W., & Cruse, D. A)
(2) a. I have a new car. (*Cognitive Linguistics* by Croft, W., & Cruse, D. A)
b. I am eating an apple now. (*Cognitive Linguistics* by Croft, W., & Cruse, D. A)
(3) a. heavy news (*Cognitive Linguistics* by Croft, W., & Cruse, D. A)
b. sad news (*Cognitive Linguistics* by Croft, W., & Cruse, D. A)
(4) The compass turned angrily and muttered as they walked away, slipping my mother's pair of gloves into their waistband. (*My Old Home by* Lu Xun)
(5) It's time to unload the burden from your heart and move forward lightly. (BCC Corpus)
(6) He already knows the crux of the national predicament. (BCC Corpus)
(7) Parent: Teacher, how is my son Liu Xing performing? (BCC Corpus)
Teacher: Liu Xing is very well-behaved! (BCC Corpus)
(8) I lost my mother at three; he is both my father and my mother. (*Ordinary World* by Lu Yao)